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1 INTRODUCTION

A growing number of research has addressed policy design for the Anthropocene and socio-ecological balances involved (Dryzek, 2016; Steffen, et al., 2018; Sterner, et al., 2019). Climate change and the transgression of planetary boundaries have been found to depend on production patterns, innovation in backstop technologies, the functioning of international agreements and many other multidimensional interactions (IPCC, 2014). However, the interplay of social policy instruments with aspects of cooperative behaviour, population growth, inclusiveness and innovation, and its co-benefits for climate mitigation, haven't been investigated with same intensity. The present essay discusses several channels of social policy on climate mitigation and utilizes the *Universal Basic Income* (UBI) scheme as an example for endowment increasing and inclusive social policy instruments. UBI comprises the payment of a fixed amount of money to every member of a society from birth to death and is not bound to any precondition (Straubhaar, 2017). It is expected to increase resilience of individuals against disruptive and unexpected processes, such as climate change, digitization, aging population and the changing world of work, rather than particular life-trajectories (Straubhaar, 2019). UBI is found to be a social policy instrument whose effects can contribute to climate mitigation. This essay is far from being conclusive and rather aims to raise questions which require further analysis.

The remainder of the essay is organized as follows: Aspects of classical behavioural economics are discussed in section two, while the effects on population growth are comprised in section three. Section four provides the discussion on inclusion, innovation and economic growth, while section five considers the diffusion of uncertainty and resilience. Section six concludes with final remarks.

2 ENDOWMENT, KAMIKAZE AND THE MISÉRABLES

“Society is culpable in not providing a free education for all and it must answer for the night which it produces. If the soul is left in darkness sins will be committed. The guilty one is not he who commits the sin, but he who causes the darkness.”

Victor Hugo, Les Misérables

The importance of collective action and cooperation for *Spaceship Earth* and its inhabitants has been emphasized (Steffen, et al., 2018). While international institutions and functioning of agreements have been in the focus of research (Biermann, et al., 2012), social norms and values have been found to enforce pro-environmental action and contribute against disruptive processes (Nyborg, et al., 2016). Equity, fairness, justice, local norms, participation rights and the allevation of chronic poverty have been found to be vital for the efficacy of *top-down* and *bottom-up* interventions against the transgression of multiple planetary boundaries (Sterner, et al., 2019). The question is, whether these international insights are applicable intranational, and whether institutional settings can strengthen cooperation against climate change at an individual level. The perception of climate change and its mitigation differs by social milieu and income group and has partially been regarded as an elitist issue (The Washington Post, 2019). While climate change is associated with greater impacts on the poorest (IPCC, 2014), recent climate action has mainly been a matter of better educated, middle- and high-income households, as observable in the recent Fridays for Future movement (de Moor et al., 2020). For this purpose some behavioural phenomena will be discussed in a two-party setting, i.e. the wealthy and well-educated on the one hand and the

poor and less-educated on the other to show some dilemma in which UBI can alleviate challenges.

The wealthy ask the poor to cooperate for the common aim of climate mitigation in order to prevent disastrous outcomes for the whole world. The poor may ask why they should cooperate since the wealthy were not willing to cooperate either when it came to poverty eradication and the common fight against the poor's personal disasters. Laboratory experiments show that *reciprocity* plays a central role in cooperative behaviour (Rabin, 2002). If the poor perceive themselves as 'left-behind' by the elites, as miserable and treated unfair, they will not only reject cooperation for climate mitigation but might further aim for *retaliation* (Fehr & Gächter, 2000). They may try to punish '*the Unfair*', even if themselves suffer under that behaviour. We may call this a *Kamikaze Instinct* which may arise under extreme suffering where hurting the other is behaviorally feasible even if self-destruction is the outcome. Even though extreme behaviour is no mass phenomenon and climate mitigation is accepted as a common goal, *volition* might be another hindrance for cooperation (Rabin, 1998, p.22). If self-interest is involved in a benevolent offer, it is less valued than a selfless one. The invitation of the *World Economic Forum* to cooperate might be less valued than the call of young students, since the participants in Davos might be perceived as parties who could lose huge stakes due to climate change and would not ask for cooperation if not so.

The wealthy may try a different strategy and may appeal to the self-interest of the poor. Individuals dislike losses and even more than they appreciate the gains of same size (Kahneman, Knetsch, & Thaler, 1991). If promising a non-disastrous future cannot activate the poor, the fear of losing the *status quo* might (Samuelson & Zeckhauser, 1988). The poor could generally agree but may ask what loss they can dislike if they don't own anything. *Endowment* changes behaviour (Dietz & Venmans, 2019) but what *reference point* can be used for losses in the presence of nothing? The promise of a better future may not sound convincing in a disastrous present. Trust might be a scarce property.

Universal Basic Income could be an instrument with high multiplicative leverage effect. When individuals have a basic endowment, they cannot only act against losses but also appreciate and reciprocate solidarity. They are neither left-behind nor miserable anymore. Retaliation is replaced by reciprocal altruism (Rabin, 1998, p.21) since those who receive can give. *Manus manum lavat* or cooperation is based on trust which can be built up as a norm and strengthened via UBI. A status quo which is cooperatively fought for requires quid pro quo.

3 POPULATION GROWTH

One of the major contributors to climate change is population growth (IPCC, 2014, p.8). While developed countries show slow growth in population or even stagnation, developing and least developed countries show faster growth in general (The World Bank Group, 2019). Large families and children are in these countries not only culturally desired but represent an institutional setting for securing old-age and illness. Governmental institutions do not exist or malfunction; thus, family-based institutions become vital. While children can also be a burden to poor families, they secure parents once they are old enough (Oliveira, 2016). There are many correlations between poverty and family size. One particular channel is the care-taking service families provide. An official welfare scheme such as UBI would make large families economically dispensable. As we know from European states, family size follows the welfare setting within a generation, once the new welfare schemes are established (Esping-Andersen, 1990; Esping-Andersen, Gallie, Hemerijck, & Myles, 2002, Chapter 2).

A second channel is the educational attainment of women. Educational level and childbearing are negatively correlated. UBI would provide women with the necessary economic endowment for independence of men, independence of patriarchal family structures and would enable them to participate in educational programs if UBI is large enough to enable her for human capital investment. Reproductive choice of women can be influenced by educational opportunities and threats to planetary boundaries by demographic changes can be avoided if women are enabled to invest in human capital (Sterner, et al., 2019).

4 INCLUSION AND INNOVATION

The wealthier a nation, the more climate mitigation it can afford by adopting new technologies and changes in lifestyle. The question of how nations become economically successful becomes an important factor of climate mitigation and even more when this success can be achieved on a non-fossil base (Acemoglu, Aghion, Bursztyn, & Hemous, 2012). Acemoglu and Robinson (2006, 2012, 2019) answer this question with institutional settings as the key determinant of economic growth and success. Inclusive political and economic institutions lead to prosperity, while extractive institutions may temporarily lead to some growth but will fail eventually.

One key component of inclusiveness is participation in social processes. Citizens of an inclusive society are those who cannot only participate *de jure* but are also materially enabled to do so *de facto*. *Universal Basic Income* enables individuals to acquire human capital, invest in personal productivity, new working trajectories in the age of digitization, participate flexibly in the ever-changing world of work and develop ideas (Straubhaar, 2019, p.185). Data is the nucleus of the new digital society and the productive combination of these to new ideas and their implementation are called innovation. Innovation and technological development in turn are key components of climate mitigation (Edenhofer, Bauer, & Kriegler, 2005). UBI can be regarded as an investment in general innovative capacity of a society since humans who are endowed with time and resources are those who can potentially develop new ideas, whose areas of implementation are unforeseeably plural. *Increasing Returns to Scale* of innovation and its economy wide implementation make UBI potentially much more cost-effective than any sector-specific investment (IPCC, 2014, p.28). It remains a question of further research to quantify the impact of UBI on the costs of climate mitigation within the framework of an *Integrated Assessment Model*, but it is expected to generate economic growth and contribute to climate mitigation by its inclusive institutional nature.

5 DIFFUSION AND RESILIENCE

The concept of *Knightian Uncertainty* is today mainly discussed in the context of decision analytic frameworks, i.e. in *ex ante* settings where trajectories have to be chosen under no probabilistic information (e.g. Held, 2019). Knight (1921) himself also discusses social aspects of uncertainty and proposes diffusion or the distribution of its consequences as a way of meeting it *ex post* (Knight, 1921, p.239 and p.348). This insurance logic against 'the fundamental facts of life' (p. 347), as Knight attributes uncertainty, turns the 'burden' of uncertainty (p.375) into a manageable phenomenon. The individual might not be able to reduce uncertainty but becomes resilient to its unknown consequences. Socio-ecological policies of the Anthropocene have to contribute to a more resilient earth system (Dryzek, 2016; Sterner, et al., 2019) and a more resilient Homo Sapiens that can resist the shocks of climate, technological and social changes simultaneously (Straubhaar, 2019, p.160). UBI is a

candidate policy for this task. It does not assume a fixed optimal control path, a prescribed social trajectory, which is unfeasible in the age of perpetuated disruptions, but enables the individual to react flexibly to the unknown. The consequences of climate change, digitization and an aging population might lead individuals to shifts in work occupation, family status, but also to forced migration due to climate consequences. These phenomena cannot be encompassed by locally rooted welfare or retirement schemes. A universally valid and geographically transferable global *Universal Basic Income* is a futuristic policy instrument, which can enforce global and subject-independent resilience.

6 CONCLUSION

The present essay discusses several interactive aspects of social policy and climate mitigation. *Universal Basic Income* and similar encompassing policy instruments could strengthen global cooperation and contribute to climate mitigation. Further theoretical research on the impact of UBI on climate mitigation, as well as the quantification of these impacts on the costs of climate mitigation have to be conducted and could be undertaken via simulation in an *Integrated Assessment* setting.

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